# COVID-19 and Mathematical Modeling
# Name:

I was inspired to seek how math could be used to explain the COVID-19 situation by the real life situations.  On the basis the policies related to public health, a report was produced that indicated that 2.2. million fatalities would be realized in the US alone while  the U.K would record 510,000 deaths. The report was published by the Imperial College of London.

# De-contextualization

- Mathematical modeling can be used to predict the fatalities as a result of COVID-19 pandemic through sense of perception and reason.
- There are setbacks such as the inability to match the reality by the mathematic models.
- Because of issues such as trajectories and parabolas as well, the expected and desired results cannot be produced.
- Thus the question: How valuable are mathematical models in providing knowledge of how we should respond to future uncertainty?

# Knowledge Question

- Central KQ: Are mathematic models valuable in  determining future certainties or uncertainties?:

- KQ 1: Can the same models provide a way of responding to such situations?
- KQ 2: To what extent can we rely on the mathematical models to solve the uncertainties?
- While the RLS address the weight that should be accorded to mathematical models, the knowledge question address the value of the models.
- Thus, the RLS and KQ try to show how people could utilize the solutions available to respond to future uncertainties.
- WoK 1: Reason
- AoK 1: Human Science
- Also, mathematical models could be critical in developing clinical responses to the problems that we have today like Covid-19.
- WoK 2: Sense Perception
- AoK 2: Natural Sciences.
- When combined with scientific theories, the outcome can be desirable, such as curbing the spread of Covid-19.
- Key terms: mathematical models, covid-19, future uncertainty.

# Development #1

- **Claim 1**
- Statistical models in human sciences may be used to create desirable clinical and public health decisions that lead to human actions on a daily basis.
- An example is the latest paradigm developed by experts from Princeton and Carnegie Mellon, which provides a step in the right direction with respect to the follow-up of the epidemics1. Experts from Princeton and Carnegie Mellon have succeeded in creating a strategy that allows them to follow up on outbreaks by developing disease mutation accounts.
- At the moment, the experts are finding ways of applying their model to help leaders to assess the impacts of countermeasures to pandemics before they institute them.2
- These interventions are likely to be more sensitive to individual behaviors as they establish mutation accounts; in turn, individuals may gain knowledge as to how they can handle themselves as they communicate with each other and carry out their regular activities.

**Counterclaim**

- Mathematical modelling jargons can bar a clear understanding between evidence experts and mathematical modelers, therefore, becoming redundant.
- **Conclusion**
- Shared vocabulary between evidence experts and the models of mathematics can eliminate the communication barrier and facilitate a clear understanding.
- Using such terminology in areas that recognize infectious and non-communicable diseases would allow guideline writers and comprehensive reviewers to build an understanding, grouping, comparative and statistical modeling analysis that is more accurate and sensitive to people's daily lives.

# Development #2

**Claim 2**

- Effective mitigation can be made when mathematical models are implemented in conjunction with other scientific theories.
- According Choice and Ki, mathematical models such as SEIHR, there are energies needed to slow down the spread of Covid-19 virus.
- Wearing of masks and social distancing are unarguably effective in reducing the spread of the Covid-19 virus.
- Contact tracing and locating the sick people means that the Covid-19 scourge can be put to control.2

**Counterclaim**

- The above controls must be implemented carefully prevent the  peak of the spread of Covid-19 virus.
- Since the transmitting time went from 4 to 2 days, the outbreak stopped on time. However, with the crisis at its height, the number of sick people as a whole has not increased substantially, particularly with the introduction of these approaches3.

**Conclusion**

- The spread of the virus can be slowed down if the transmission rare is reduced by 99% or 90%. The number of the infected people will also reduce inevitably.

# Conclusion

- An inference can be made through sense perception and reason that to mathematical models can be used to facilitate an ideal comprehension of Covid-19 and its future projections.
- In the study published by Carnegie and Mellon, a mathematical model that allows the follow up for epidemics can be key in determining the end of the virus spread as well as the future statistics for people infected with the same.
- The lack of shared knowledge between evidences experts and mathematical modelers is a major problem associated with such ideas. Thus, such loopholes require ideal solution if mathematical models are to be integral in preventing the spread of Covid-19 virus.
- There are uncertainties in the decision making process such as integrated management risks prevent the stakeholders from addressing the consequence that are likely to result form unconventional policy choices.
- Regulation options include separate ex ante actions (e.g. prevention and dissimilar risk spread provisions) and ex post actions aimed at minimizing and spreading damages. The effects of adopting a given series of policy decisions are usually calculated by various metrics such as ex ante and ex post prices, the benefits of prevention procedures, environmental sustainability, well-being and risk exposure indicators (risk value)1.

# Link to RLS

- To conclude, there is a clear relationship between mathematical modelling and mitigations towards reducing the spread of Covid-19.
- In a report published by Princeton and  Carnegie Mellon reveal that mathematical models such as SEIHR can be used to understand Covid-19 from a mathematical model perspectives.
- In a personal level, I have come to believe that the best way to curb the spread of the Covid-19 pandemic is by understanding how the spread occurs in the first place.
- Mathematical models can be used to identify the areas at high risk of contacting the virus. By so doing, people in the most affected areas must be considered first while developing the measures to counter the spread.


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